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United States Patent [19]

Maresh et al.

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[56]

[11] Patent Number:

5,997,445

[45] Date of Patent:

Dec. 7, 1999

[54]	ELLIPTICAL EXERCISE METHODS AND APPARATUS	5,593,372	1/1997	Miller 482/52 Rodgers 482/70 Rodgers 482/57
[76]	Inventors: Joseph D. Maresh, P.O. Box 645, West Linn, Oreg. 97068; Kenneth W. Stearns, P.O. Box 55912, Houston, Tex. 77055	5,707,321	1/1998	Rodgers 482/52 Maresh 482/57 Lee 482/52

[21] Appl. No.: 09/245,508 Primary Examiner—

Feb. 5, 1999

482/79, 80, 62, 52, 53

References Cited U.S. PATENT DOCUMENTS

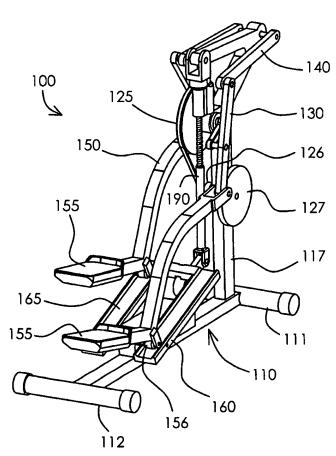
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Primary Examiner-Stephen R. Crow

57] ABSTRACT

An exercise apparatus has a linkage assembly which is movably mounted on a frame and links rotation of left and right crank to elliptical movement of left and right foot supporting members. The linkage assembly includes left and right connector links having three discrete connection points. A first connection point on each connector link is rotatably connected to a respective crank. A second connection point on each connector link is constrained to move through a predetermined path relative to the frame. A third connection point on each connector link is constrained to a first portion of a respective foot supporting link. A second portion of each foot supporting link is constrained to move through a predetermined path relative to the frame. The path of the foot supporting links may be altered by adjusting a first frame member relative to a second member.

17 Claims, 6 Drawing Sheets



اسمه معملا